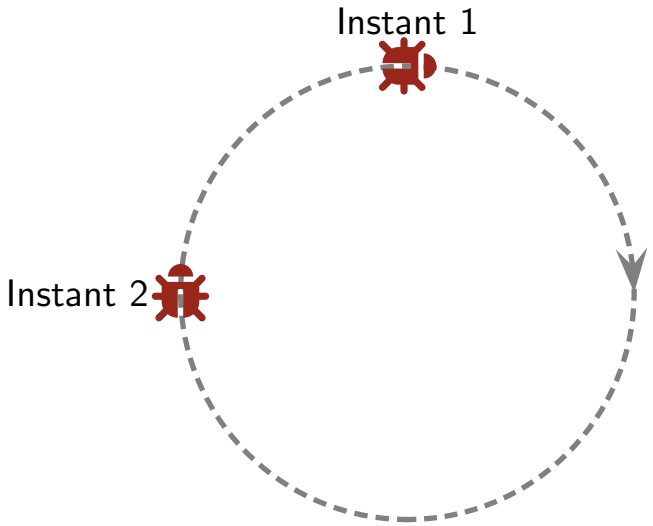
Question 1

A bug moves along a circular path at a constant speed.



Which of the following is most accurate about the accelerations at the indicated instants?

1. They are both zero.
2. They are non-zero and identical.
3. They are non-zero and opposite.
4. They are non-zero and different.

Question 2

A man pushes a crate across a horizontal sheet of ice, such as in the PhET animation "Forces and Motion". The man pushes the crate for an initial period of $2\,\mathrm{s}$ and after this the crate loses contact with the man's hand. Which of the following is/are true?

1. The crate can move only *while* the man pushes on it.
2. The crate can move only *after* the man has stopped pushing it.
3. The crate can move while the man pushes on it and after the man has stopped pushing on it.

Question 3

A man pushes an object across a horizontal sheet of ice, such as in the PhET animation "Forces and Motion". The man pushes the crate for an initial period of $2\,\mathrm{s}$ and after this the crate loses contact with the man's hand but continues to slide to the right. Which of the following is/are true?

1. The man never exerts a force on the crate.
2. The man exerts a force on the crate during all times that the crate is moving.
3. The man only exerts a force on the crate *during* the initial period of $2\,\mathrm{s}$.
4. The man only exerts a force on the crate *after* the initial period of $2\,\mathrm{s}$.